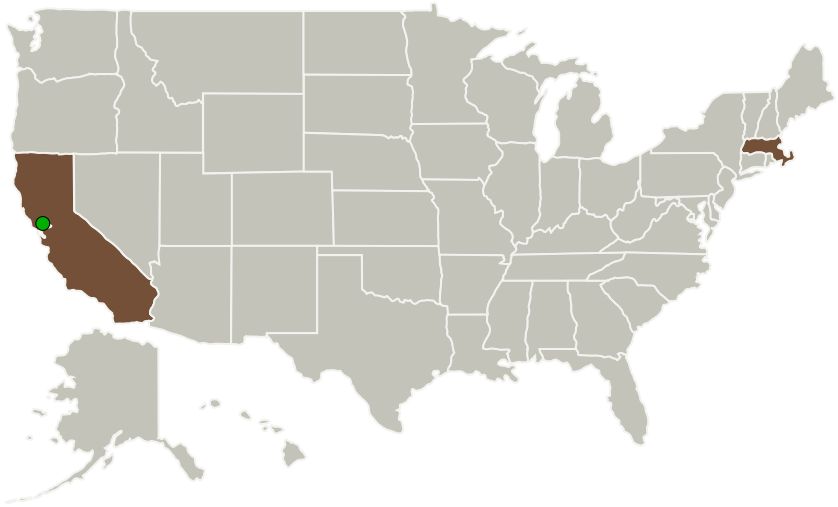
In Situ Particle Asymmetry Factor Monitor, Phase I

Completed Technology Project (2011 - 2011)

Project Introduction

Aerosol particles affect the radiative balance of the earth directly, by scattering and absorbing solar and terrestrial radiation, and indirectly, by acting as cloud condensation nuclei. It is now recognized that the atmospheric loading of aerosols generated through human activities can exert an influence on the earth's radiation budget comparable in magnitude with greenhouse gases. However, the uncertainties in the current understanding of aerosol direct and indirect forcing "limit the ability to quantify human influences on climate change". We propose to design, construct and test a monitor suitable for ambient monitoring which is capable of directly measuring the angular distribution of light scattered from the aerosol fraction and therefore the asymmetry parameter, g. The asymmetry parameter, which is a key input parameter in radiative forcing models, cannot at present be measured directly and must be inferred from other measurements.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Aerodyne Research, Inc	Lead Organization	Industry	Billerica, Massachusetts
Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

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Primary U.S. Work Locations	
California	Massachusetts

Project Transitions

February 2011: Project Start

September 2011: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/138633)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Aerodyne Research, Inc

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

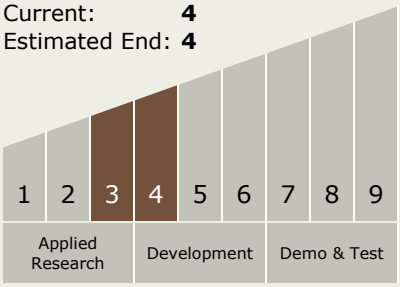
Carlos Torrez

Principal Investigator:

Andrew Freedman

Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX11 Software, Modeling, Simulation, and Information Processing
  - TX11.4 Information Processing
    - TX11.4.1 Science, Engineering, and Mission Data Lifecycle

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System